



# Texaco Exploration and Production, Inc.

## Natural Gas STAR Case Study Series

*At Texaco, reducing methane emissions is about being a good corporate citizen. In an era of increasing public and private sector concern about climate change, Texaco is tracking and reducing its greenhouse gas emissions. Texaco's Natural Gas STAR Program, piloted at its Gulf Coast regional facilities, is a central part of this effort. Since its inception in October 1996, Texaco's Gas STAR Program has quantified 860,000 Mcf in emission reductions and saved the company \$1.7 million. By keeping reporting informal and emphasizing cooperative participation from facilities and employees, the pilot program has set the stage for a smooth company-wide program expansion with minimal time investment.*



## PARTNER PROFILE

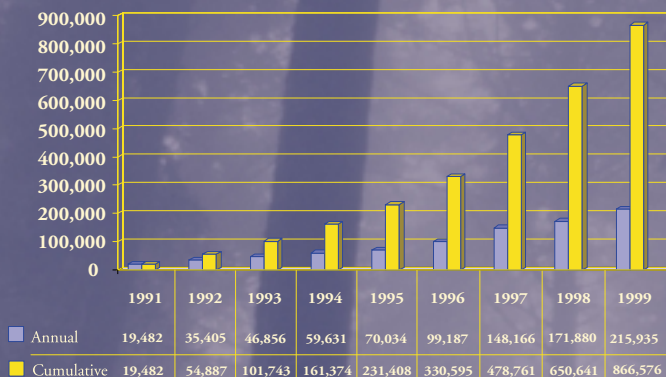
Texaco, Inc., is an integrated oil and gas company that employs more than 18,000 people worldwide and has annual revenues of \$35.7 billion. The White Plains, New York-based company and its affiliates explore for, produce, and sell petroleum and natural gas in more than 150 countries. The company's natural gas production totals 786 billion cubic feet per year.

Texaco Exploration and Production, Inc., a subsidiary of Texaco, Inc., joined EPA's Natural Gas STAR Program in 1996, implementing a pilot emission reduction program at its Gulf Coast regional facilities. Texaco's Gulf Coast region consists of production facilities on the Gulf Coast of Texas, Louisiana, Mississippi, Alabama, and adjacent offshore areas.



## TEXACO'S GAS STAR PROGRAM ACHIEVEMENTS

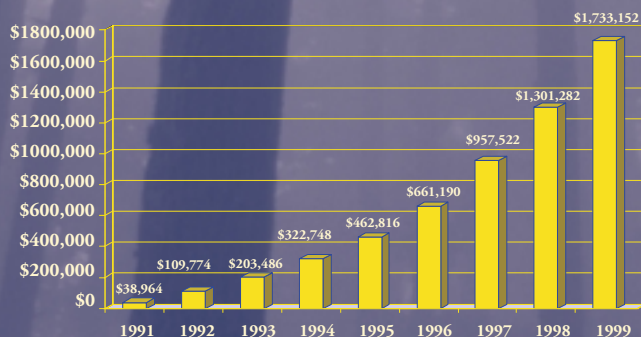
Texaco's Emission Reductions (Mcf)



Texaco has averaged 75,000 Mcf annual emission reductions since 1991. As part of the pilot program, Texaco inventoried emission reductions achieved prior to joining Gas STAR in 1996.

Texaco eliminated seven times as much methane in 1998 as it did in 1991.

Texaco's Emission Reduction Savings



Texaco saves an average of nearly \$150,000 each year through its pilot program emission reduction activities.

## WHAT TEXACO LEARNED FROM NATURAL GAS STAR

In its four years of involvement with Natural Gas STAR, Texaco has learned several tactics that contribute to smooth program implementation and continued participation. The lessons learned are outlined below:

- Gain senior management support and commitment to full participation in the emission reduction pilot program.
- Sell the program to midlevel managers who oversee day-to-day operations. This is as important as securing upper management support. Demonstrating, through data or pilot projects, that emission reductions will actually save money often secures operating personnel support.
- Integrate Gas STAR with existing programs to facilitate transfer of information such as new management practices and emission reduction totals.
- Get operating personnel involved in identifying and reducing emissions.



## Joining Natural Gas STAR

Early in the development of the EPA Natural Gas STAR Program, Texaco representatives met with EPA officials to discuss program requirements, potential for cost savings, and environmental benefits. Although interested in the program, the company adopted a cautious approach to Natural Gas STAR and delayed joining the program until there was a higher level of experience from other natural gas producers.

The catalyst for joining Natural Gas STAR came in 1996, when Texaco representatives received EPA's invitation to join the program following an announcement that fellow producers Exxon and Mobil had partnered with EPA. Mike Milliet, an air quality specialist in Texaco's Gulf Coast regional headquarters in New Orleans, spoke to Exxon and Mobil personnel and confirmed that Natural Gas STAR was fully voluntary, did not involve a large time commitment for reporting, and allowed flexibility in deciding which best management practices were suitable for the company.

Mr. Milliet relayed this information to the director of Environmental, Health, and Safety for the Exploration and Production Division, who recommended to the head of the division that Texaco join Natural Gas STAR. The EPA invitation letter and conversations with Exxon and Mobil convinced the division's senior managers to sign the program's Memorandum of Understanding.



## Texaco's Pilot Program

### Getting Started

Texaco chose to pilot test the emission reduction program to assess its feasibility and develop a sound program before implementing it on a wider scale. Because of his familiarity with the Natural Gas STAR Program and expertise in air quality

management, Mr. Milliet headed up the pilot project at Texaco's Gulf Coast regional facilities. The company sent a letter to all managers in its domestic operations, notifying them of Texaco's commitment and describing the pilot activities.

### Implementation

Texaco took a collaborative approach to pilot implementation, emphasizing education, outreach, information sharing, and relationship building. The company believed successful implementation would require the commitment of personnel at every level, particularly engineers and other operating personnel—those who could best identify equipment for cost-effective upgrades or replacement.

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*-Mike Milliet,  
Air Quality Specialist, Texaco, Inc.*

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An important component of Texaco's approach was engaging and educating the field personnel on the full potential for emission reductions from their facilities. Prior to joining the program, many Texaco engineers had come to accept methane emissions as a normal part of business. They were aware that emission reductions from activities such as the installation of flash tank separators and low-bleed pneumatic control devices were possible, but did not realize the magnitude of savings that could be achieved.

To improve awareness and facilitate employee participation, the Gulf Coast region reoriented the air quality component of annual environmental training to focus heavily on emission reduction activities. During the training, Mr. Milliet and his col-

leagues introduced field personnel to the program, described major methane and cost saving opportunities, demonstrated how to quantify and verify these activities, and urged field personnel to notify Texaco Gas STAR managers of similar activities, past or present, at their plants.

To secure cooperation from operating personnel,

Texaco *encouraged* staff to reduce methane emissions, but did not *direct* them to implement specific activities.

Texaco presented operating personnel the option of developing their own methods for reducing emissions and encouraged them to share new emission reduction ideas, which could be disseminated to the rest of the pilot group.

Texaco gathered information on emission reductions through facility visits and its greenhouse gas emission inventory. Interactions during facility visits involving air permitting provided Mr. Milliet information on

the types of emission reduction activities facilities were pursuing and reductions they had achieved, forming the basis of the region's Natural Gas STAR reporting. Texaco supplemented this information with data gathered through the company's greenhouse gas emission inventory. The inventory involved measuring and reporting the emission of methane, carbon dioxide, and other greenhouse gases by equipment type in each business unit. Texaco used this data to locate and address equipment and work practices that resulted in large methane emissions and utilized this highly detailed information for Gas STAR reporting.

### Pilot Activities

The company placed a high priority on identifying, quantifying, and replicating successful emission reduction activities already in place. The most commonly implemented practices included:

- **Identifying and replacing high-bleed pneumatic control devices.** The program helped characterize the use of these devices in current operations. An initial review at the time of pilot implementation indicated that facilities already used low/no-bleed

## TEXACO'S KEYS TO SUCCESS

- **Focusing on one region initially.** By piloting the program in one region, Texaco was able to test its applicability to the company's operations and build momentum for broader implementation. Emission reduction information was easier to collect and disseminate in one region than it would have been if Texaco had launched the program simultaneously in all domestic business units. Initial information gathering proved critical for the decision to implement the program across the entire company.
- **Using a cooperative approach.** Rather than mandating emission reduction activities, Texaco relied on the voluntary cooperation of field staff. Since implementation and reporting was voluntary, Texaco's Gas STAR managers did not have to spend time following up with every facility to make sure the plant filed an emission reduction report.
- **Decentralizing implementation decisions.** Texaco allowed individual facilities the flexibility to determine which practices were most appropriate to their organizations and to develop innovative new emission reducing processes, which could be shared with the rest of the region.

devices or compressed air in new installations. In some cases, the program helped expand the use of compressed air at existing facilities; for instance, one facility began to use compressed air from a compressor station to power pneumatic devices at an adjacent tank battery.

- **Installing flash tank separators on glycol dehydrators and quantifying emission reductions.** At the time of the pilot, many of the glycol dehydrators in southern Louisiana had already been equipped with flash tanks and condensers. Texaco documented reductions for these devices and evaluated the economic feasibility of installing flash tanks on the remaining units in south Louisiana and south Texas.
- **Exploring ways to reduce or eliminate flash gas emissions from treaters and storage tanks.** Texaco worked to identify cost-effective opportunities to capture flash gas at various facilities and to implement technology to capture or prevent emissions of flash gas. The company evaluated the installation of vapor recovery units (VRUs) and the connection of vents from treaters to fuel gas systems.
- **Converting pneumatic pumps to air operation or replacing pneumatic pumps with other devices.** At the time of the pilot, Texaco operated approximately 200 pneumatic pumps in southern Louisiana to move fluids in and around tank batteries. The pilot involved evaluating the use of air rather than natural gas as the motive force for these devices or replacing the devices with nonemitting alternatives where economically feasible.

The results of these activities, in quantified emission reductions and cost savings, are listed in the “Texaco’s Gas STAR Program Achievements” section.

### Maintaining the Program

“Throughout the industry,” notes Mr. Milliet, “people like to stick to the old method of operations. New procedures encounter an inertial effect—because it’s new and different, it needs additional help to keep it going. Like any other

program, Texaco’s Gas STAR Program requires an ongoing marketing effort.” Texaco sustains program momentum by incorporating discussion of emission reduction activities into onsite air permitting visits.

As an air permitting specialist, Mr. Milliet often weaves technical suggestions into his exchanges with operation managers, either in informal conversations during annual environmental training or during air permitting visits. In these interactions, Mr. Milliet tries to inform field staff of opportunities for improving emission reductions and encourages them to work with him on developing methodologies, installing new equipment, and verifying reductions.

One of the benefits of the program, according to Mr. Milliet, is that it not only brings emission reduction activities to the attention of engineers, but it also demonstrates newer, better, and more economical process and equipment changes. “The [EPA Natural Gas STAR] program’s wealth of information about emission reduction tactics eliminated time spent exploring and testing new solutions,” he said.



### Expanding the Program

With the pilot program successfully implemented, Texaco’s Gas STAR team is poised to introduce the program to the rest of the company. Texaco plans to follow its pilot program model, providing broad guidance and allowing each business unit to determine exactly how it wants to implement emission reduction activities.

## Dovetailing With the Engineering Reliability Program

Texaco is considering using its engineering reliability program as one of the vehicles to facilitate program expansion. The engineering reliability program provides a system for assessing the operational efficiency of company facilities through inspections and reviews of equipment downtime, preventative maintenance, and work processes. Texaco personnel conduct “root cause analyses” to locate the source of inefficiencies and develop measures to eliminate problems.

Texaco believes methane emission reduction activities will dovetail extremely well with the engineering reliability program, as emission reductions often result from improvements in process and equipment efficiency. One significant benefit of linking Texaco’s Gas STAR Program with engineering reliability is that Texaco would not need to develop a new reporting framework specifically for Gas STAR. The engineering reliability program already has a network of contacts who could be responsible for gathering and reporting emission reduction information. Until Gas STAR is completely integrated with engineering reli-

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Air Quality Specialist, Texaco, Inc.*

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ability, Texaco will likely use a Gas STAR-specific reporting procedure, possibly through the company’s Gas STAR intranet site.

## Decentralizing Implementation

Texaco would like to provide individual business units with the flexibility to determine how to implement emission reduction programs. Instead of having one coordinator or centralized Gas STAR team for the

entire domestic organization, Texaco likely will establish a program coordinator for each business unit. These coordinators could be individuals in the business units who currently manage air regulatory issues.

Business units might be able to choose to implement the activities through engineering reliability or through a program of their own, if that program is more applicable. According to Mr. Milliet, “Rather than sponsoring a top-down approach to implementation, Texaco hopes to foster a two-way information exchange between the business units and corporate headquarters.”

## What Natural Gas STAR Means to Texaco

**A**lthough lost methane is a relatively small portion of Texaco’s total natural gas production, the company joined Natural Gas STAR to be a good corporate citizen and to gain recognition for its efforts. In a sense, the economic benefits of Natural Gas STAR are “icing on the cake.”

In the long term, however, the project will be sustained by Texaco’s desire to control greenhouse gas emissions. “You can generally sell individual emission reduction projects on economics alone,” says Mr. Milliet, “but because methane emissions are such a small portion of overall production, companywide efforts need to tie into customer and societal concerns about greenhouse gases. The time is becoming riper for examining greenhouse gas emissions at a company, industry, and society level.” Texaco is working on quantifying greenhouse gas emissions throughout the company and is in the process of integrating greenhouse gas management analyses into all business planning processes, including strategic planning among all business units and the review of new projects worldwide.

“In general, Texaco will put its money where it can get the best return,” says Mr. Milliet, “but we have to think about the company’s position and society’s position on global warming as well.”